

Title (en)  
NON-ISOLATED POWER SUPPLY DEVICE

Title (de)  
NICHTISOLIERTE STROMVERSORGUNGSVORRICHTUNG

Title (fr)  
DISPOSITIF D'ALIMENTATION ÉLECTRIQUE NON ISOLÉ

Publication  
**EP 3240170 A4 20180725 (EN)**

Application  
**EP 15872914 A 20151218**

Priority  
• JP 2014261532 A 20141225  
• JP 2015085449 W 20151218

Abstract (en)  
[origin: EP3240170A1] The present invention addresses the problem of detecting the timing at which an inductor current becomes zero, turning on a switching element at the optimal timing, and enhancing power efficiency without increasing part quantity or external terminal quantity. A control circuit is configured from a semiconductor integrated circuit; is provided with a first external terminal to which a voltage produced by the conversion of the current flowing through a switching element by a current-to-voltage conversion element is input, a second external terminal to which the voltage of a point of contact of an inductor and rectification element or a voltage proportional thereto is input, a filter for smoothing the voltage input into the second external terminal, and a voltage comparison circuit for comparing the voltage smoothed by the filter and the voltage input into the second external terminal; and performs control such that the switching element is switched from off to on near the point where the inductor current becomes zero on the basis of the voltage comparison circuit output and the switching element is switched from on to off in response to the voltage applied to the first external terminal reaching a prescribed voltage.

IPC 8 full level  
**H02M 3/156** (2006.01); **H02M 1/08** (2006.01); **H05B 44/00** (2022.01); **H02M 1/00** (2006.01)

CPC (source: EP KR US)  
**H02M 1/08** (2013.01 - KR); **H02M 1/083** (2013.01 - US); **H02M 1/14** (2013.01 - KR); **H02M 3/155** (2013.01 - EP KR US); **H02M 3/156** (2013.01 - US); **H05B 45/38** (2020.01 - EP US); **H02M 1/0058** (2021.05 - US); **Y02B 20/00** (2013.01 - US); **Y02B 70/10** (2013.01 - EP)

Citation (search report)  
• [I] US 2014085947 A1 20140327 - CAPILLA JOSE M [FR], et al  
• [A] US 2011199023 A1 20110818 - ZIMMERMANN MICHAEL [CH], et al  
• See references of WO 2016104345A1

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Designated contracting state (EPC)  
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DOCDB simple family (publication)  
**EP 3240170 A1 20171101**; **EP 3240170 A4 20180725**; CN 107112896 A 20170829; CN 107112896 B 20190412; JP 2016123195 A 20160707; JP 6417930 B2 20181107; KR 20170099843 A 20170901; US 10069398 B2 20180904; US 2017353100 A1 20171207; WO 2016104345 A1 20160630

DOCDB simple family (application)  
**EP 15872914 A 20151218**; CN 201580070844 A 20151218; JP 2014261532 A 20141225; JP 2015085449 W 20151218; KR 20177011645 A 20151218; US 201515537988 A 20151218